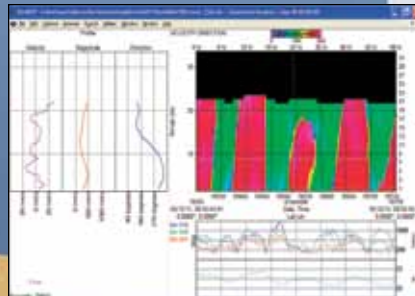# Workhorse Sentinel

SELF-CONTAINED 1200, 600, 300 kHz ADCP

The Global Leader in High-accuracy Data Collection

The self-contained **Sentinel** is Teledyne RD Instruments' most popular and versatile Acoustic Doppler Current Profiler (ADCP) configuration, boasting thousands of units in operation in over 50 countries around the world.

By providing profiling ranges from 1 to 165m, the high-frequency Sentinel ADCP is ideally suited for a wide variety of applications. Thanks to Teledyne RDI's patented Broadband signal processing, the Sentinel also offers unbeatable precision, with unmatched low power consumption, allowing you to collect more data over an extended period.

The lightweight and adaptable Sentinel is easily deployed on buoys, boats, or mounted on the seafloor. Real-time data can be transmitted to shore via a cable link or acoustic modem, or data can be stored internally for short or long-term deployments. The Sentinel is easily upgraded to include pressure, bottom tracking, and/or directional wave measurement—for the ultimate data collection solution.

The Workhorse Sentinel offers:

- **Versatility:** *Direct reading or self contained, moored or moving, the Sentinel provides precision current profiling data when and where you need it most.*

- **A solid upgrade path:** *The Sentinel has been designed to grow with your needs. Easy upgrades include pressure, bottom tracking, and directional wave measurement.*

- **Precision data:** *Teledyne RDI's BroadBand signal processing delivers very low-noise data, resulting in unparalleled data resolution and minimal power consumption.*

- **A four-beam solution:** *Teledyne RDI's 4-beam design improves data reliability by providing a redundant data source in the case of a blocked or damaged beam; improves data quality by delivering an independent measure known as error velocity; and improves data accuracy by reducing variance in your data.*

TELEDYNE RD INSTRUMENTS
Everywhere**you**look™

Workhorse Sentinel

SELF-CONTAINED 1200, 600, 300 kHz ADCP

Technical Specifications

Water Profiling						
Depth Cell Size[1]	*Typical Range[2] 12m* **1200kHz**		*Typical Range[2] 50m* **600kHz**		*Typical Range[2] 110m* **300kHz**	
Vertical Resolution (m)	Range[3] (m)	Std. Dev.[4] (cm/s)	Range[3] (m)	Std. Dev.[4] (cm/s)	Range[3] (m)	Std. Dev.[4] (cm/s)
0.25m	*11–14*	*12.9*				
0.5m	*13–16*	*6.1*	*39*	*12.9*	*see note [1]*	
1m	*14–18*	*3.0*	*43*	*6.1*	*92–71*	*12.8*
2m	*15–20[2]*	*2.0*	*47*	*3.0*	*102–78*	*6.1*
4m	*see note [1]*		*52[2]*	*2.0*	*113–86*	*3.0*
8m					*126–95[2]*	*2.0*

[1] User's choice of depth cell size is not limited to the typical values specified.
[2] Longer ranges available.
[3] Profiling range based on temperature values at 5°C and 20°C, salinity = 35ppt.
[4] BroadBand mode single-ping standard deviation (Std. Dev.).

Long Range Mode

	Range (m)	Depth Cell Size (m)	Std. Dev. (cm/s)
1200kHz	24	2	3.8
600kHz	70	4	4.2
300kHz	165	8	4.2

Profile Parameters

Velocity accuracy:
- **1200, 600:** 0.3% of the water velocity relative to the ADCP ±0.3cm/s
- **300:** 0.5% of the water velocity relative to the ADCP ±0.5cm/s

Velocity resolution: 0.1cm/s
Velocity range: ±5m/s (default) ±20m/s (maximum)
Number of depth cells: 1–255
Ping rate: Up to 10Hz

Echo Intensity Profile

Vertical resolution: Depth cell size
Dynamic range: 80dB
Precision: ±1.5dB

Transducer and Hardware

Beam angle: 20°
Configuration: 4-beam, convex
Internal memory: Two PCMCIA card slots; one memory card included
Communications: Serial port selectable by switch for RS-232 or RS-422. ASCII or binary output at 1200-115,200 baud.

Standard Sensors

Temperature (mounted on transducer)**:**
   Range: -5° to 45°C
   Precision: ±0.4°C
   Resolution: 0.01°

Tilt: Range: ±15°
   Accuracy: ±0.5°
   Precision: ±0.5°
   Resolution: 0.01°

Compass (fluxgate type, includes built-in field calibration feature)**:**
   Accuracy: ±2° [5]
   Precision: ±0.5° [5]
   Resolution: 0.01°
   Maximum tilt: ±15°

[5] <±1.0° is commonly achieved after calibration

Power

External DC input: 20–50VDC
Internal battery voltage: 42VDC new; 28VDC depleted
Battery capacity: @0°C: 450 watt hours

Environmental

Standard depth rating: 200m; optional to 6000m
Operating temperature: -5° to 45°C
Storage temperature*: -30° to 60°C
Weight in air: 13.0kg
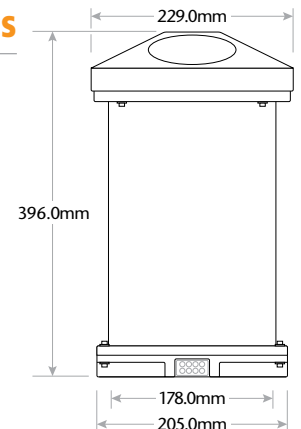**Weight in water:** 4.5kg
* Without batteries

Software

Teledyne RDI's Windows™-based software included:
- WinSC—Data Acquisition
- WinADCP—Data Display and Export

Available Options

- Memory: 2 PCMCIA slots, total 4GB
- Pressure sensor
- External battery case
- High-resolution water-profiling modes
- Bottom tracking or surface referencing track
- AC/DC power converter, 48VDC output
- Pressure cases for depths up to 6000m
- Directional Wave Array
- Acoustic Modem
- Inductive Modem

Dimensions

229.0mm
396.0mm
178.0mm
205.0mm